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SRI LANKA

Bringing Low-Impact Hydroponics to Farmers

USAID/US-AEP assists a scientist to transfer low-impact hydroponics to farmers



“I was convinced that hydroponics could be of great value to Sri Lanka given the present environmental challenges and land fragmentation. But it was not until my exposure to the art of simplified hydroponics that I was able to find a system that was affordable, accessible, and appropriate for poor people to increase agricultural productivity.”

Susil Liyanarachchi, Founder, Sri Lanka Institute for Simplified Hydroponics

Challenge

Farmers in Sri Lanka face the dual challenge of land fragmentation and inadequate irrigation. From an environmental perspective, nutrient runoff from irrigation contributes to a host of water quality issues. Under these conditions, affordable, high-efficiency, high-yield agriculture systems can benefit farmers, the environment and provide sustainability.

Initiative

Dr. Susil Liyanarachchi, Projects Director of Intermediate Technology Development Group, believed that traditional cultivation and animal husbandry could be adapted to increase productivity, food security and environmental integrity if biological, land, and labor resources were used efficiently. Consequently, he started experimenting with hydroponics, a soil-free growing technique that uses 60% less water while producing four times the yield.

USAID has been a longtime supporter of industrial level hydroponics development in Sri Lanka; the iceberg lettuce used at local McDonald's restaurants, for example, is grown hydroponically in large, computer controlled farms. While this method is too expensive to be feasible for independent farmers, Dr. Liyanarachchi was confident the systems could be scaled down into an affordable version.

In conjunction with a local university, he tested several systems for suitability to agricultural micro-enterprises. He discovered the main barriers to hydroponics adoption were the existing “one-size-fits-all” nutrient mix, rather than one specifically designed for Sri Lankan needs, and the cost of greenhouses. In addition, greenhouse seeds are expensive, but don't always grow.

Searching for solutions, Dr. Liyanarachchi began a dialogue with Peggy Bradley, Executive Director of the International Institute for Simplified Hydroponics. He believed their method had the potential to address some of the barriers to simplified hydroponics in Sri Lanka. US-AEP subsequently funded training in Mexico for Dr. Liyanarachchi to help equip him to promote simplified hydroponics into community development while helping with natural resource management.

Results

Dr. Liyanarachchi experimented with simplified hydroponics systems in conjunction with two national universities to grow non-“greenhouse” plants in an open environment. He built hydroponics stands using wooden pallets, filling them with inert material such as rice husks or river sand. These modifications made small hydroponics farming feasible for low cost micro-agriculture.

Dr. Liyanarachchi also founded the Lanka Institute for Simplified Hydroponics, with the goal of further adapting this technology to Sri Lanka, and training others on the application of the technology. His work has been accepted by the Department of Agriculture as having potential to be used in Sri Lankan micro-gardens.